HUGHES
An EchoStar Company

Hughes WS-1000 Nano

UAV BVLOS Architecture Implementation

Reliable, secure, and adaptive communications are both advantageous and mission critical in today's dynamic operational landscape. Hughes is proud to introduce the WS-1000, enabling high bandwidth 4G/5G Beyond Visual Line of Sight (BVLOS) Command Control and Communications (C3) for Unmanned Aerial Vehicles (UAVs). This next-generation, compact, multi-network communications architecture is engineered for demanding operational environments. The WS-1000 is one of many modem options powering the Hughes GUARDIAN (All Domain Communications) Service or as a vendor integrated communications channel.



Hughes WS-1000 "NANO"
30 x 52mm

KEY FEATURES AND TACTICAL ADVANTAGES

Innovative and Adaptable BVLOS Communications

Designed for integration into UAV platforms, controllers, heads-up displays, the WS-1000 ensures global persistent connectivity across vast operational theaters.

Low Size, Weight, and Power (SWaP)

Optimized for tactical deployment, our platform delivers high performance in a compact footprint which is ideal for Group 1–3 UAVs and other SWaP-constrained platforms.

Hughes Warpspeed Smallest Form Factor

- Embedded solution for Small Unmanned Aircraft System (sUAS), handhelds, headsets, and more
- Lowest cost entry – service enabler for Hughes GUARDIAN access

Global 5G/4G Cellular Modem

- 5G Redcap at up to 200 Mbps downlink and 100 Mbps uplink
- 4G/LTE CAT4 Fallback

Secure Network Gateway

- Executes Hughes Router OS and Embedded SNE Functionality. Switches between Cellular and Line of Sight (LOS) connectivity.*
- ADCS Secure Tunnel Backbone
- FIPS 140-3 Level 2 Trusted Platform Module

eSIM and Network Management

- Dual SIM On-board: eSIM + 4FF Physical SIM
- Automatic Network Failover: SIM and Wide Area Network (WAN) failover
- Primary, Alternate, Contingency, and Emergency (PACE) and network route planning.
- Pre-provision SIM and upload network rules prior to mission

Quick Deployment

- Zero touch provisioning and remote endpoint management*

Easy to Integrate

- M.2 B-Key standard connector for power and data (USB 2.0/UART)
- No custom kernel drivers needed. Support Windows / Linux out of the box
- Built-in MAVLink router for framing and routing MAVLink between Unmanned Aerial System (UAS) and network endpoints*

**Future Roadmap Features*

Hughes WS-1000 Nano

Technical Specifications

Processor Subsystem	1x ARM A7 @ 1.7 GHz 1 GB DDR/1 GB NAND
Secure Network Gateway	Hughes GUARDIAN Secure Tunnel Backbone FIPS 140-3 Level 2 TPM
# SIM	4FF + eSIM
Antenna/MIMO	Rx Diversity and MIMO DL 2×2 (2 MHF.4)
GNSS	L1/L5 (MHF.4)
M.2 Key	Industry Standard M.2 B-Key • 3.3V Supply and Gnd • USB 2.0 • PCI Express x1 • SIM 1 and 2 (option) • UART • GPIOs
Operational Temperature	-40 °C to +85 °C
Weight	12 g
Dimensions (W x L x H)	30mm x 52mm x 5mm

Radio Capabilities

Cellular Radio Access	3GPP Rel 17, 5G Redcap 4G/LTE CAT4 Fallback
Cellular Bands	**5G FR1:** n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n70/n71/n77/n78/n79 **4G LTE:** B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B30/B34/B38/B39/B40/B41/B42/B43/B48(CBRS)/B66/B70/B71/B106
Cellular Throughput	5G Sub.6 FDD and TDD operation in 5G NR stand-alone • DL: 223 Mbps • UL: 123 Mbps LTE Cat 4 • DL: 200 Mbps • UL: 105 Mbps
LTE/5G Transmit Power	23 dBm (Power Class 3) 26 dBm (Power Class 2 in B41/n41)

For more information, visit
www.hughes.com

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